REMARKS

The Non-Final Office Action mailed April 4, 2008, has been received and reviewed. Prior to the present communication, claims 1-19 were pending in the subject application. All claims stand rejected. Each of claims 1, 11, and 14 has been amended herein, while claims 17-19 have been cancelled. As such, claims 1–5, 7-9, and 11-16 remain pending. It is submitted that no new matter has been added by way of the present amendments. Claims 1–5, 7-9, and 11-19 stand rejected under 35 U.S.C. § 103(a). Reconsideration of the subject application is respectfully requested in view of the above amendments and the following remarks.

Support for Claim Amendments

Each of independent claims 1, 11, and 14 have been amended herein to clarify the process of "obtaining a priority order of the network node pairs." Support for these claim amendments may be found in the Specification, for example, at paragraphs [0030], [0043], and [0058]. Additionally, independent claim 1 has been amended herein to clarify the process of "obtaining one or more mapping options for mapping multiple logical links between two or more pairs of network nodes onto physical paths that are maximally disjoint." This amendment draws support from, at least, paragraphs [0027], [0031], and [0042]-[0052] of the Specification. As such, it is respectfully submitted that no new matter has been added by way of the present amendments to the claims.

Rejections based on 35 U.S.C. § 103(a)

Claims 1, 2, 14 and 15 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Application No. 2002/0097671 to Doverspike et al. (hereinafter the

"Doverspike reference") in view of U.S. Patent No. 6,707,796 to Li (hereinafter the "Li reference"). As the Doverspike reference and the Li reference, whether taken alone or in combination, fail to teach or suggest all of the elements of the rejected claims, Applicants respectfully traverse this rejection, as hereinafter set forth.

Independent claim 1, as amended hereinabove, recites one or more computer-storage media having computer-useable instructions embodied thereon for performing a method for identifying optimal mapping of logical links to the physical topology of a network. In particular, the method includes, inter alia, "obtaining one or more mapping options for mapping multiple logical links between two or more pairs of network nodes onto physical paths that are maximally disjoint," "obtaining a priority order of the network node pairs," and "correlating the mapping options with the priority order of the network nodes." By way of clarification, obtaining the priority order includes "(a) determining a predetermined priority of a connection supported by each of the network node pairs, wherein the predetermined priority is based on a size of geographic locations that are linked by the connection and volume of flow of traffic that is carried therebetween," and "(b) deriving the *priority order* of the network node pair supporting the connection based on the size of the geographic locations and the volume of flow of the traffic that is carried on the connection, wherein *the network node pair is prioritized high when the geographic locations are major in size and more volume of the traffic is carried on the connection*" (emphasis added). In this way, the logical links that carry more traffic and connect major geographic locations within the network are ranked high in the priority order, and accordingly, these logical links are mapped first.[1]

[1] *See* Specification at pgs. 11-12, ¶ [0043].

Title 35 U.S.C. § 103(a) declares, a patent shall not issue when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." The Office Action, at page 4, lines 10-13, states that the primary reference, Doverspike, is silent about how to use a priority order to identify optimal mapping of logical links within a network. Further, with reference to claim 17 (the subject matter of which is incorporated into claim 1), the Office indicates that the Doverspike reference in view of the Li reference teaches all the subject matter of the claimed invention with the exception of determining priority based on the flow of the connection.[2] The Office cites to U.S. Patent No. 6,240,068 to Dawes (hereinafter the "Dawes reference") to anticipate this feature of the amended claim 1.

The Dawes reference does not describe deriving a priority order of a network node pair supporting the connection based on the size of the geographic locations and the volume of flow of the traffic that is carried on the connection, where the network node pair is prioritized high when the geographic locations are major in size and more volume of the traffic is carried on the connection. The Dawes reference describes grouping connections between nodes of a network by assigning the connection a priority based on "capacity or volume or length."[3] However, the Dawes reference does not teach (a) assigning the network nodes a priority, (b) basing the priority on the size of the geographic locations and the volume of flow of the traffic that is carried on the connection, and (c) prioritizing the network nodes high when the geographic locations are major in size and more volume of the traffic is carried on the connection. As such, Dawes reference fails to cure the deficiencies of the combination of

[2] *See* Office Action at pg. 17, ll. 4-6.

Doverspike and Li. As a result, it is respectfully submitted that independent claim 1 is allowable. In addition, dependent claim 2 is allowable based in part on its dependency from claim 1.[4] Accordingly, the proposed combination does not meet the limitations of the claimed subject matter and as a matter of law the Examiner's rejection cannot stand.

Further, the Li reference teaches away from prioritizing the network nodes high when more volume of the traffic is carried on the connection. A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path the Applicants took.[5] Here, Li teaches a metric that indicates the desirability of an MSP router as a designated router for a (source, group) pair, where, in the preferred embodiment, the metric is based on a distance from a source to the MSP router. However, the MSP router that has the lowest metric, i.e., least amount of traffic, is preferred as the designated router.[6] Accordingly, one skilled in the art, upon reading Li, would have been led on a path divergent from that taken by Applicants' claimed invention.

In addition, claim 1 clarifies the process of obtaining one or more mapping options for mapping multiple logical links between two or more pairs of network nodes onto physical paths that are maximally disjoint. In particular, mapping the multiple logical links onto physical paths that are maximally disjoint includes, at least, "(a) ascertaining that completely disjoint physical paths between the two or more pairs of network nodes cannot be found within a physical topology of the network," "(b) identifying one or more fiber segments that comprise each of the logical links, wherein each of the one or more fiber segments traverses a pair of

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[3] *See Dawes reference* at col. 4, ll. 5-25.
[4] *See* 37 C.F.R. § 1.75(c) (2006).
[5] *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994).

network nodes," "(c) assigning a jointness value to each fiber segment of the one or more fiber segments based, in part, on a number of the logical links that share the fiber segment," "(d) combining the jointness values of the fiber segments to find jointness metrics for each of the one or more logical links," and "(e) selecting the logical links associated with low jointness metrics, such that the selected logical links approach existing in parallel." In this way, a particular process is conducted that evaluates fiber segments between network nodes to identify physical paths that are maximally disjoint. The Office has not cited to subject matter within the identified references support the obviousness rejection that describes, either explicitly or inherently, each of the elements of the recited process above.

Independent claim 14 recites (a) assigning the network nodes a priority, (b) basing the priority on the size of the geographic locations and the volume of flow of the traffic that is carried on the connection, and (c) prioritizing the network nodes high when the geographic locations are major in size and more volume of the traffic is carried on the connection, similar to amended claim 1. Accordingly, for at least the reasons offered above, claim 14, and claim 15 that depends therefrom, are patentable over Doverspike, Li, and Dawes, and in condition for allowance.

Claims 3-5 and 16 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Doverspike reference in view of the Li reference, and further in view of U.S. Patent No. 6,577,601 to Wolpert (hereinafter the "Wolpert reference"). As the Doverspike reference, the Li reference, and the Wolpert reference, whether taken alone or in combination, fail to teach or suggest all of the limitations of the rejected claims, Applicants respectfully traverse this rejection, as hereinafter set forth.

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[6] *See Li reference* at col. 7, ll. 15-43.

Claims 3-5 and 16 depend from claims 1 and 14, respectively, as amended hereinabove. As previously mentioned, the primary reference, Doverspike, in combination with the Li reference fail to describe the following features of claims 1 and 14: (a) assigning the network nodes a priority, (b) basing the priority on the size of the geographic locations and the volume of flow of the traffic that is carried on the connection, and (c) prioritizing the network nodes high when the geographic locations are major in size and more volume of the traffic is carried on the connection. The Wolpert reference does not consider these features, but instead, focuses on measuring network performance.[7] Further, the Office Action does not assert that the Wolpert reference teaches these claimed elements above, rather, the Examiner merely asserts that the Wolpert reference discloses using a maximum time delay and obtaining a relative time delay. As such, Wolpert fails to cure the deficiencies of the combination of Doverspike and Li. As a result, it is respectfully submitted that dependent claims 3-5 and 16 are allowable based in part on their dependency from claims 1 and 14.[8]

Claims 7 and 9 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Doverspike reference in view of the Li reference, and further in view of a publication entitled "Survivable Routing of Logical Topologies in WDM Networks" by Modiano et al. (hereinafter the "Modiano reference"). As the Doverspike reference, the Li reference, and the Modiano reference, whether taken alone or in combination, fail to teach or suggest all of the limitations of the rejected claims, Applicants respectfully traverse this rejection, as hereinafter set forth.

Claims 7 and 9 depend from claim 1, as amended hereinabove. As previously mentioned, the primary reference, Doverspike, in combination with the Li reference fail to

[7] *See Wolpert reference* at col. 3, ll. 15-63.

describe the following features of claim 1: (a) assigning the network nodes a priority, (b) basing the priority on the size of the geographic locations and the volume of flow of the traffic that is carried on the connection, and (c) prioritizing the network nodes high when the geographic locations are major in size and more volume of the traffic is carried on the connection. The Modiano reference does not consider these features, but instead, focuses on developing algorithms for routing traffic on survivable paths in the event of a failure.[9] Further, the Office Action does not assert that the Modiano reference teaches these claimed elements above, rather, the Examiner merely asserts that the Modiano reference discloses performing a correlation on NSFNET. As such, Modiano fails to cure the deficiencies of the combination of Doverspike and Li. As a result, it is respectfully submitted that dependent claims 7 and 9 are allowable based in part on their dependency from claim 1.[10]

Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over the Doverspike reference in view of the Li reference, and further in view of a publication entitled "Design of Fault-Tolerant Logical Topologies in Wavelength-Routed Optical IP Networks" by Nucci et al. (hereinafter the "Nucci reference"). As the Doverspike reference, the Li reference, and the Nucci reference, whether taken alone or in combination, fail to teach or suggest all of the limitations of the rejected claim, Applicants respectfully traverse this rejection, as hereinafter set forth.

Claim 8 depends from claim 1, as amended hereinabove. As previously mentioned, the primary reference, Doverspike, in combination with the Li reference fail to describe the following features of claim 1: (a) assigning the network nodes a priority, (b) basing

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[8] *See* 37 C.F.R. § 1.75(c) (2006).
[9] *See Modiano reference* at pg. 1, Abstract.
[10] *See* 37 C.F.R. § 1.75(c) (2006).

the priority on the size of the geographic locations and the volume of flow of the traffic that is carried on the connection, and (c) prioritizing the network nodes high when the geographic locations are major in size and more volume of the traffic is carried on the connection. The Nucci reference does not consider these features, but instead, focuses on fault-tolerant logical topologies in wavelength-routed optical networks.[11] Further, the Office Action does not assert that the Nucci reference teaches these claimed elements above, rather, the Examiner merely asserts that the Nucci reference discloses that a correlation is performed using Tabu search methodology. As such, Nucci fails to cure the deficiencies of the combination of Doverspike and Li. As a result, it is respectfully submitted that dependent claim 8 is allowable based in part on its dependency from claim 1.[12]

Claim 11 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over a publication entitled "Design of a Survivable WMD Photonic Network" to Armitage et al. (hereinafter the "Armitage reference") in view the Li reference. As the Armitage reference and the Li reference, whether taken alone or in combination, fail to teach or suggest all of the limitations of the rejected claim, Applicants respectfully traverse this rejection, as hereinafter set forth.

Independent claim 11, as amended hereinabove, recites, in part, (a) assigning the network nodes a priority, (b) basing the priority on the size of the geographic locations and the volume of flow of the traffic that is carried on the connection, and (c) prioritizing the network nodes high when the geographic locations are major in size and more volume of the traffic is carried on the connection. The Office Action, at page 15, lines 2-5, states that the primary reference, Armitage, is silent about how to use a priority order to identify optimal mapping of

[11] *See Nucci reference*, passim.

logical links within a network. The Li reference is cited for disclosing a network node priority order, but does not describe each of the elements of the process for assigning network nodes a priority, as discussed above with reference to claim 1. As such, Li fails to cure the deficiencies of Armitage. As a result, it is respectfully submitted that independent claim 11 is allowable.

Claims 12 and 13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over the Armitage reference in view of the Li reference, and further in view of the Doverspike reference. As the Doverspike reference, the Li reference, and the Armitage reference, whether taken alone or in combination, fail to teach or suggest all of the limitations of the rejected claims, Applicants respectfully traverse this rejection, as hereinafter set forth.

Claims 12 and 13 depend from claim 11, as amended hereinabove. As previously mentioned, the primary reference, Armitage, in combination with the Li reference fail to describe the following features of claim 1: (a) assigning the network nodes a priority, (b) basing the priority on the size of the geographic locations and the volume of flow of the traffic that is carried on the connection, and (c) prioritizing the network nodes high when the geographic locations are major in size and more volume of the traffic is carried on the connection. As discussed above, with reference to claim 1, the Examiner states that the Doverspike reference fails to teach these claimed elements. As such, Doverspike fails to cure the deficiencies of the combination of Armitage and Li. As a result, it is respectfully submitted that dependent claims 12 and 13 are allowable based in part on their dependency from claim 11.[13]

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[12] *See* 37 C.F.R. § 1.75(c) (2006).
[13] *See* 37 C.F.R. § 1.75(c) (2006).

Claims 17, 18, and 19 have been canceled in the present communication. Accordingly, the rejections to these claims is rendered moot.

CONCLUSION

For at least the reasons stated above, claims 1–5, 7-9, and 11-16 are now in condition for allowance. Applicants respectfully request withdrawal of the pending rejections and allowance of the claims. If any issues remain that would prevent issuance of this application, the Examiner is urged to contact the undersigned – 816-474-6550 or btabor@shb.com (such communication via email is herein expressly granted) – to resolve the same. It is believed that no fee is due, however, the Commissioner is hereby authorized to charge any amount required to Deposit Account No. 21-0765, referencing attorney docket number SPRI.104359.

Respectfully submitted,

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